



3-Heights™ PDF Printer Service

Version 4.5

User Manual

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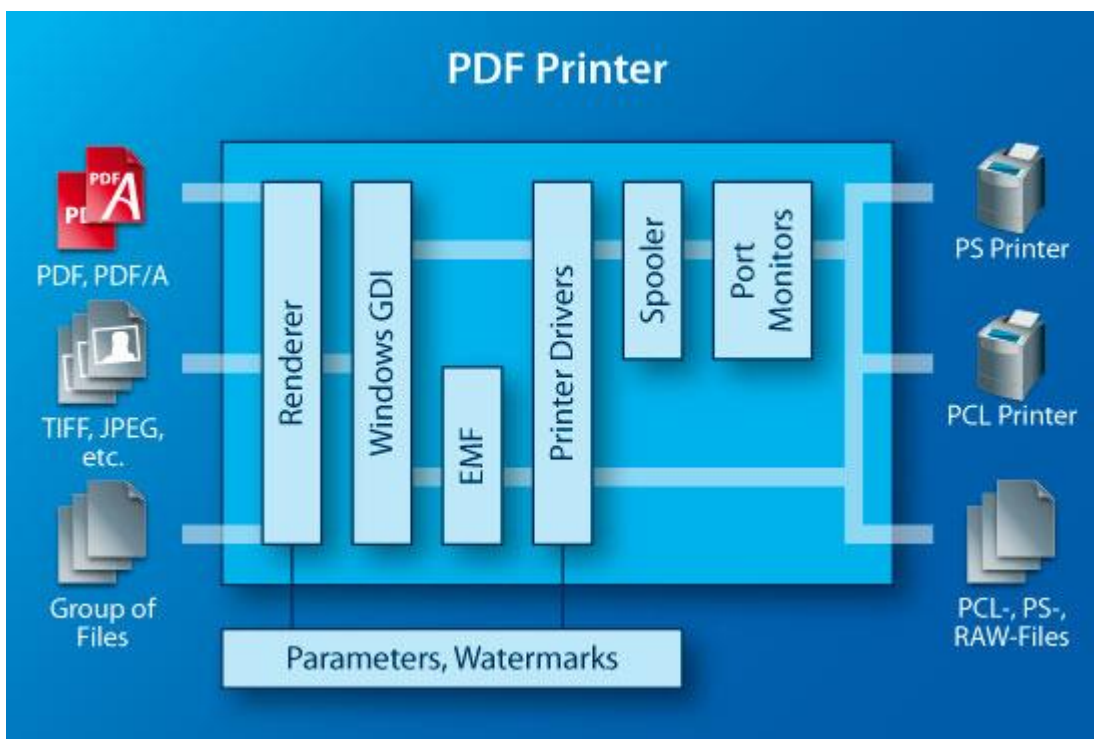
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1 Introduction

1.1 Overview

The 3-Heights™ PDF Printer Service is a configurable Windows service that allows for automated background printing of PDF documents and raster images using watched folders. It can print to any local or remote Windows printer including PostScript, PCL or virtual printers.

The tool is characterized by its high level of performance, it is adaptable to specific requirements and supports PDF/A-compliant printing.



1.2 Functions

The 3-Heights™ PDF Printer translates PDF, PDF/A, TIFF, JPEG and other image formats into the language of a printer driver such as PostScript or PCL. Documents are either printed on a physical printer (local, remote or via Internet) or issued as a file. The tool offers a variety of printer control options such as paper tray, paper format, duplex printing, stapling, merging multiple pages to form a single print job, and applying watermarks in the form of (personalized) texts and images. It is also possible to query the properties of the target printer (print margins, resolution, etc.) and to optimize printing accordingly. In addition to all current printer models the tool supports older printers via emulation. The printer supports CITRIX virtual printer drivers.

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Features

- Print PDF documents
- Divert print to file
- Local / remote printing
- Select paper format
- Select paper tray
- Select print quality
- Define page sequence
- Select printer-specific properties
- Color management control
- Link printer properties with watched directories
- Supports http, https and ftp data streams
- Print raster images (TIFF, JPEG, etc.)
- Group documents to form a print job
- Integrate watermark (text, image)

Formats

Input Formats:

- | | |
|---------|------------------------|
| • PDF | • JPEG |
| • PDF/A | • JPEG2000 and JPEG-LS |
| • BMP | • PBM |
| • GIF | • PNG |
| • JBIG2 | • TIFF |

Output Formats:

- Print spool formats PostScript, PCL 5, PCL 6, AFP

Compliance

- Standards: ISO 19005-1 (PDF/A-1), ISO 32000 (PDF 1.7)

1.3 Operating Systems

Windows XP, Vista, 7, 8, 8.1 – 32 and 64 bit

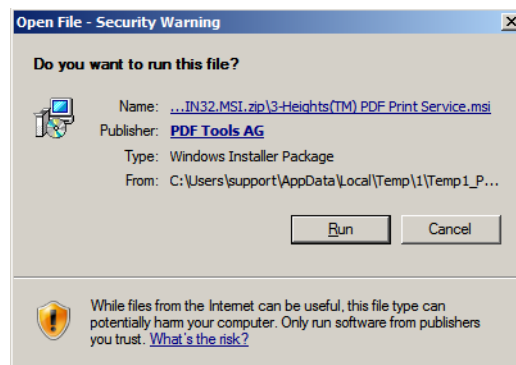
Windows Server 2003, 2008, 2008 R2, 2012, 2012 R2 – 32 and 64 bit

2 Installation

Note: Earlier version (prior to 1.91.11.0) of this product were not delivered as MSI. This chapter describes how to install using MSI. For instructions on how to install an earlier version, please refer to an earlier documentation.

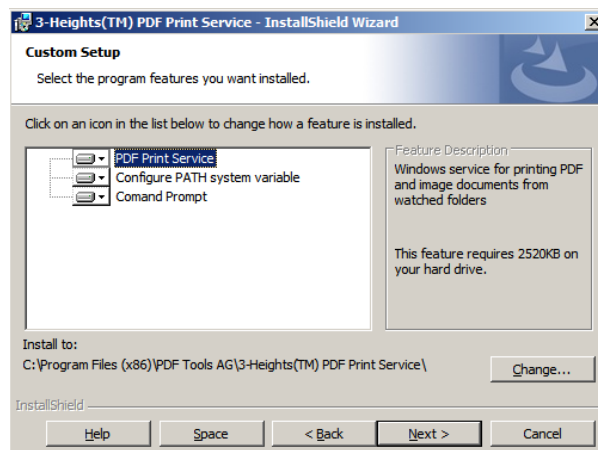
1. Download the ZIP archive PRNR[Version].MSI.zip from your download account at www.pdf-tools.com. If you are using a 64 bit operating system, it is required to install the 64 bit version of the service.
2. Extract the MSI file that is contained in the ZIP archive.
3. Run the MSI file "3-Heights(TM) PDF Print Service.msi" and follow the instructions of the install wizard.

Depending on your OS and security settings, you may receive a security warning and need to agree that the installation is executed. Press "Run" to do so.



4. Steps in the Install Wizard:

- In the welcome dialog press "Next".
- License Agreement: Read the license agreement. You must agree to the agreement in order to proceed.
- Destination Folder: Adjust the installation directory if required.
- Select Type: Select "Complete" or "Custom".
- Custom Setup:
 - PDF Print Service: This installs the 3-Heights™ PDF Printer Service. This option is required.
 - Configure PATH system variable: If enabled, the 3-Heights™ PDF Printer Service is added to the environment variable path, which means it can be started and stopped from any path.
 - Command Prompt: Add a command prompt for easy starting and stopping of the service.

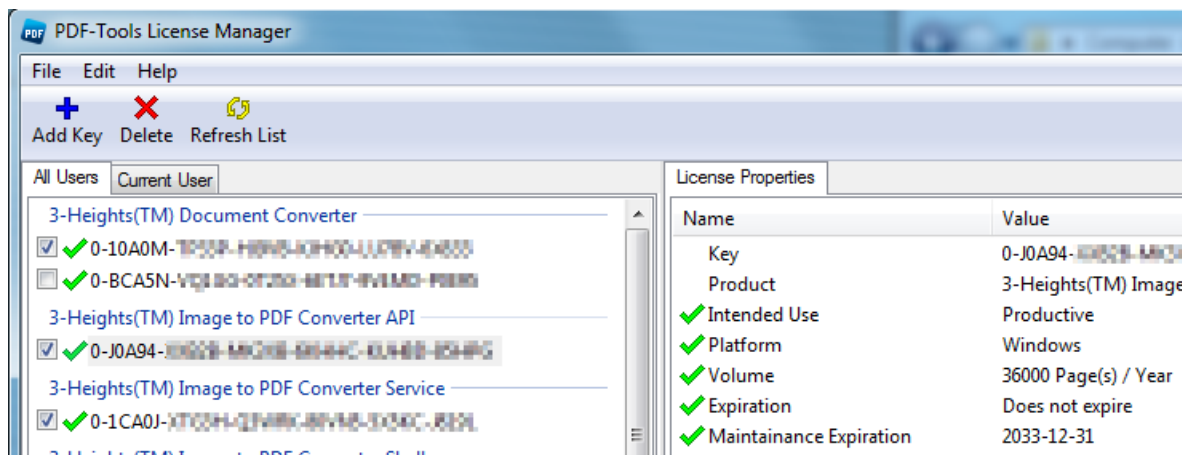


3 License Management

For services, there is only one possibility to pass the license key to the application: The license key is installed using the GUI tool (Graphical user interface). This is the easiest way if the licenses are managed manually.

3.1 Graphical License Manager Tool

The GUI tool *LicenseManager.exe* is located in the *bin* directory of the product kit.



List all installed license keys

The license manager always shows a list of all installed license keys in the left pane of the window. This includes licenses of other PDF Tools products.

The user can choose among:

- Licenses available for all users. Administrator rights are needed for modifications.
- Licenses available for the current user only.

Add and delete license keys

License keys can be added or deleted with the "Add Key" and "Delete" buttons in the toolbar.

- The "Add key" button installs the license key into the currently selected list.
 - Note: Services run by default under the LOCAL SERVICE user, not under the current user.
- The "Delete" button deletes the currently selected license keys.

Display the properties of a license

If a license is selected in the license list, its properties are displayed in the right pane of the window.

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Select between different license keys for a single product

More than one license key can be installed for a specific product. The checkbox on the left side in the license list marks the currently active license key.

3.2 Platform considerations

Windows

The license keys are stored in the registry:

- HKLM\Software\PDF Tools AG (for all users)
- HKCU\Software\PDF Tools AG (for the current user)

4 Configuration

In order to configure the 3-Heights™ PDF Printer Service different necessary steps must be taken. The main step is editing the configuration file, however it may also be required to adjust settings on the operating system level.

- Edit the configuration file *pdfprintsrvr.ini*. This file must reside in the same directory as the executable *pdfprintsrvr.exe*. Any changes applied to the configuration file take impact after the service is re-started.

How to configure this file is described in the chapter *Editing the Configuration File pdfprintsrvr.ini*.

- Like any Windows service, the 3-Heights™ PDF Printer Service runs under a defined user. The default user is the user "localsystem". Any resources, such as printers or directories must be accessible by user under which the service is running. When using local watched folders printing to local printers, the user "LocalSystem" should be sufficient, however when using resources on remote hosts, such as a print server, the service should be running under a different, dedicated user account, which has access permissions to those resources.

How the user under which the service runs can be changed is described in the chapter *Starting the Service*.

- The user under which the service runs must have its Windows' temporary directories defined, otherwise it will not be able to extract embedded fonts from PDF documents and temporarily install them.

For the user under which the service runs, the two system environment variables TEMP and TMP must be set and point to an existing directory in which it has read and write access permission rights.

Once configured, the service can be created, started, paused, continued, stopped and deleted via the command line. To use the create and delete functions, administrator permissions are required. To start and stop the service, operator permissions are required.

4.1 Editing the Configuration File pdfprintsvr.ini

Before starting the PDF Print Service for the first time, the file *pdfprintsvr.ini* needs to be modified. Editing this file while the PDF Print Service is running has no impact. The service first needs to be stopped and restarted after the modification. When opening this file with a text editor, it looks like this:

```
[PdfPrintSvr]

AutoDelete=True

Threads=1

Thread1=-p "HP LaserJet 4050 Series PS" -w C:\PdfPrintSvr\HPLJ -pg 1 1
```

The meaning is as following:

AutoDelete=True This option automatically deletes a PDF file after it is printed successfully. When set to False, the processed file will be copied to the sub directory *Succeeded*. Documents that fail to print, are never deleted.

Threads=1 stands for the total amount of concurrent printer threads. Each thread can have its own assigned printers and settings.

Thread1= sets the options such as printer, output folder, and other settings for Thread1.

-p "HP LaserJet 4050 Series PS" sets Thread1 to use the printer with this specific name. The string is in quotation marks because it contains blanks. Whenever a string contains blanks it must be in between quotation marks. If it doesn't have blanks, quotation marks are optional. This applies to all strings, such as printer names or watched folders.

-w C:\PdfPrintSvr\HPLJ sets the watched folder for Thread1. The path must be an absolute path. Network mapped drive letters or relative paths or driver letters mapped via the subst command should not to be used as they are possibly not recognized by user under which the printer service process is running, such as the default user "LocalSystem". (The user can be changed as described in chapter "Creating and Starting the PDF Print Service".)

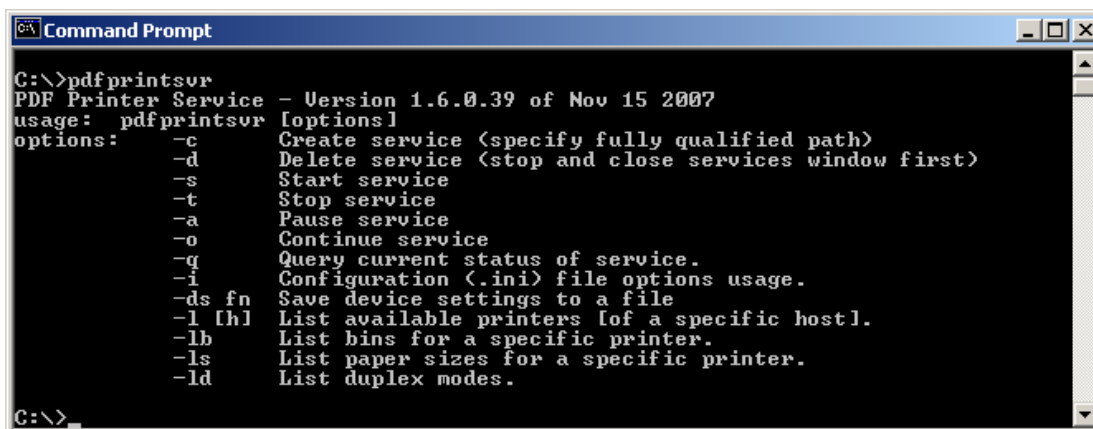
-pg 1 1 sets the page range to page 1 to 1.

This means if a PDF document is moved to the folder *C:\PdfPrintSvr\HPLJ4050*, it is processed by the service and printed using the printer "HP LaserJet 4050 Series PS". Only the first page is printed.

Retrieve Information about Available Printers and Settings

Open a shell and type pdfprintsvr without parameters. This lists the usage, displaying all available options, as shown in the image below. The first six options (-c, -d, -s, -t, -a, -o) are used to control the service process, these should only be used once the configuration file is completed.

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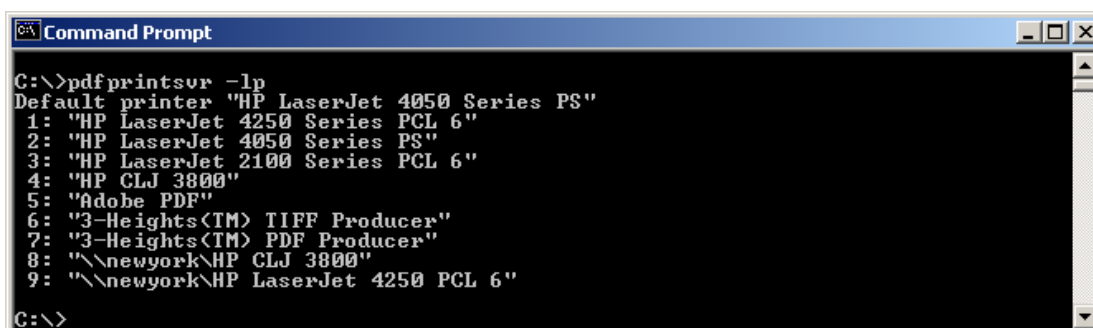


```

C:\>pdfprintsrvr
PDF Printer Service - Version 1.6.0.39 of Nov 15 2007
usage: pdfprintsrvr [options]
options:
    -c      Create service <specify fully qualified path>
    -d      Delete service <stop and close services window first>
    -s      Start service
    -t      Stop service
    -a      Pause service
    -o      Continue service
    -q      Query current status of service.
    -i      Configuration <.ini> file options usage.
    -ds fn  Save device settings to a file
    -l [h]  List available printers [of a specific host].
    -lb     List bins for a specific printer.
    -ls     List paper sizes for a specific printer.
    -ld     List duplex modes.
C:\>

```

Use the option -l to get a list of all available printers:



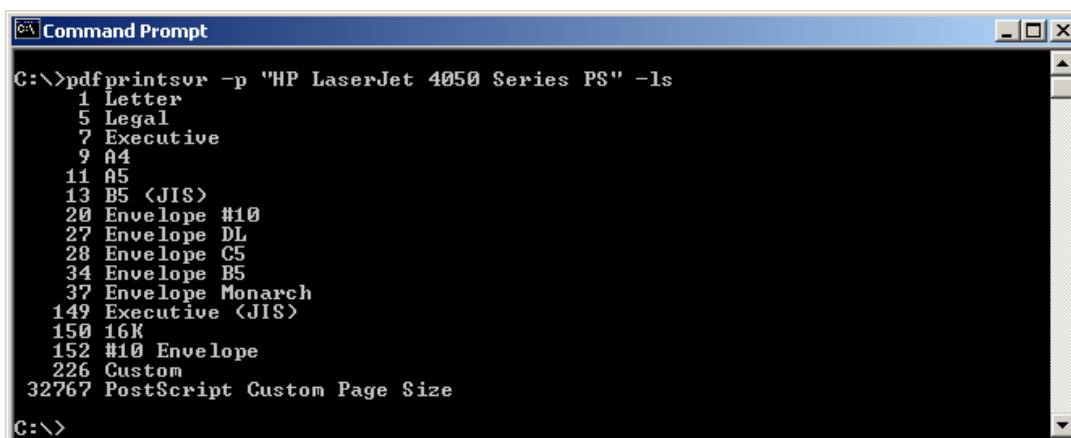
```

C:\>pdfprintsrvr -lp
Default printer "HP LaserJet 4050 Series PS"
1: "HP LaserJet 4250 Series PCL 6"
2: "HP LaserJet 4050 Series PS"
3: "HP LaserJet 2100 Series PCL 6"
4: "HP CLJ 3800"
5: "Adobe PDF"
6: "3-Heights(TM) TIFF Producer"
7: "3-Heights(TM) PDF Producer"
8: "\\newyork\HP CLJ 3800"
9: "\\newyork\HP LaserJet 4250 PCL 6"
C:\>

```

The printer names listed with this option can be used in the configuration file *pdfprintsrvr.ini*.

To list the printer device capabilities of a printer, use the option -p followed by the printer name (in quotes if there are blanks) and then one of the options to list the bins (-lb), paper size (-ls) or duplex mode (-ld).



```

C:\>pdfprintsrvr -p "HP LaserJet 4050 Series PS" -ls
1 Letter
5 Legal
7 Executive
9 A4
11 A5
13 B5 (JIS)
20 Envelope #10
27 Envelope DL
28 Envelope C5
34 Envelope B5
37 Envelope Monarch
149 Executive (JIS)
150 16K
152 #10 Envelope
226 Custom
32767 PostScript Custom Page Size
C:\>

```

Configuration Sample

The following configuration file sets up three watched folders (= three Threads). Thread 1 and 2 are both for the same printer, but with a different setting, thread 3 is for a different printer.

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[PdfPrintSvr]

AutoDelete=True

Threads=3

Thread1=-p "HP LaserJet 4050 Series PS" -w e:\HP4050

Thread2=-p "HP LaserJet 4050 Series PS" -w e:\HP4050Duplex -d 2

Thread3=-p "MINOLTA-QMS magicolor 2350" -w e:\Minolta

<p>Important: Do not use printers that have pop-up message boxes, such as the Adobe PDF printer driver or printing to a file. Doing so will lock the service and it needs to be deleted and recreated.</p>

5 Running

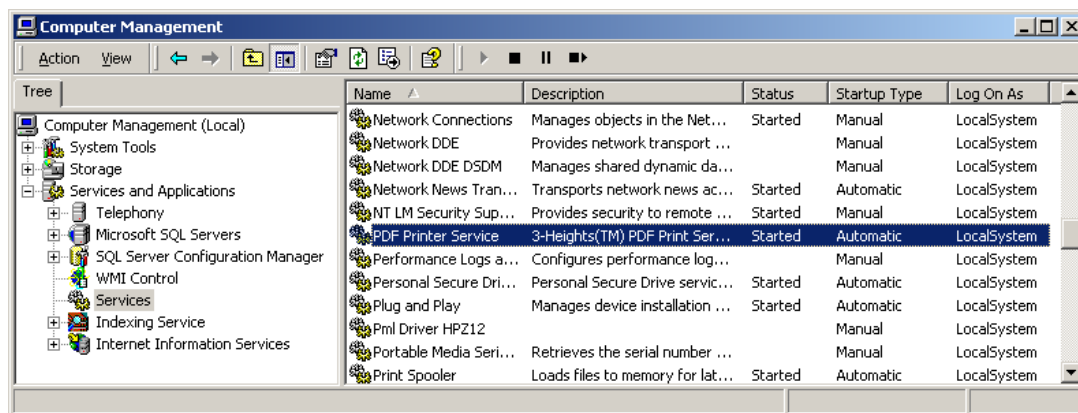
5.1 Starting the Service

Once the configuration is done, the service can be started and controlled via the command line. To create or delete the service, administrator permissions are required.

1. To create the service, use the option `-c`. This function will automatically search for the executable path.

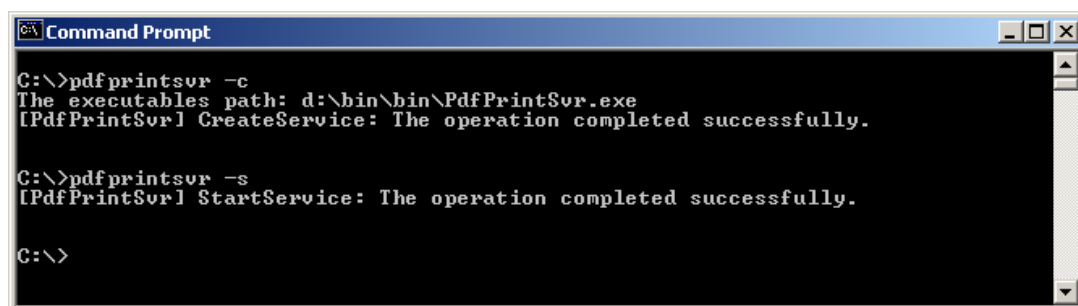
Important: It is essential that *pdfprintsrv.exe* be on a **non-mapped** drive.

After executing this command, the service is created. It is now visible in the "Computer Management" window under "Services". To open the "Computer Management" window, go to Start -> Control Panel -> Administrative Tools -> Computer Management. If the service was created correctly it appears as *PDF Printer Service* as shown in the image below.



By default, the user is set to "LocalSystem". After the service is created, the user can be changed. This will be required in a situation where a network share is used as a watched folder or remote printers are used and the process needs to run under a user with the appropriate access permission rights.

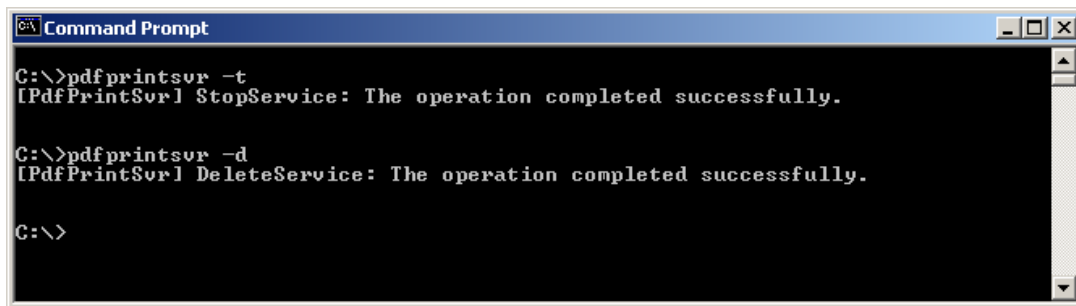
2. After it is created, the service can be started with the option `-s`. The path can be omitted if the *pdfprintsrv.exe* is included in the path environment variable. The following image shows these two steps.



- Files can now be copied or drag-and-dropped into the watched folder.

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- The service monitors the configured watched folders. Any PDF document or raster image that is copied or moved into a watched folders is picked up and processed.
 - Picked up files are optionally renamed and moved to the folder *Jobs*. The renaming gives the file a 16 character long timestamp to a create unique job ticket.
 - A worker thread picks up the file from *Jobs* and move it to *InProgress*.
 - Successfully spooled files are available in the folder *Succeeded* if "Autodelete" is set to "False" in the configuration file, otherwise they are deleted.
 - Documents that cannot be processed are moved to the folder *Failed*. A log text file is created for failed documents. This log has the same name as the input file, but the extension ".txt". The log file is available in the sub folder *Logs/*. Additionally a entry in the log file of the thread is created.
3. To stop the service, use the option -t. To restart use -s again.
 4. To delete the service use the option -d.



```
C:\>pdfprintsrvr -t
[PdfPrintSvr] StopService: The operation completed successfully.

C:\>pdfprintsrvr -d
[PdfPrintSvr] DeleteService: The operation completed successfully.

C:\>
```

5.2 Error Log Files

There are two types of error log files.

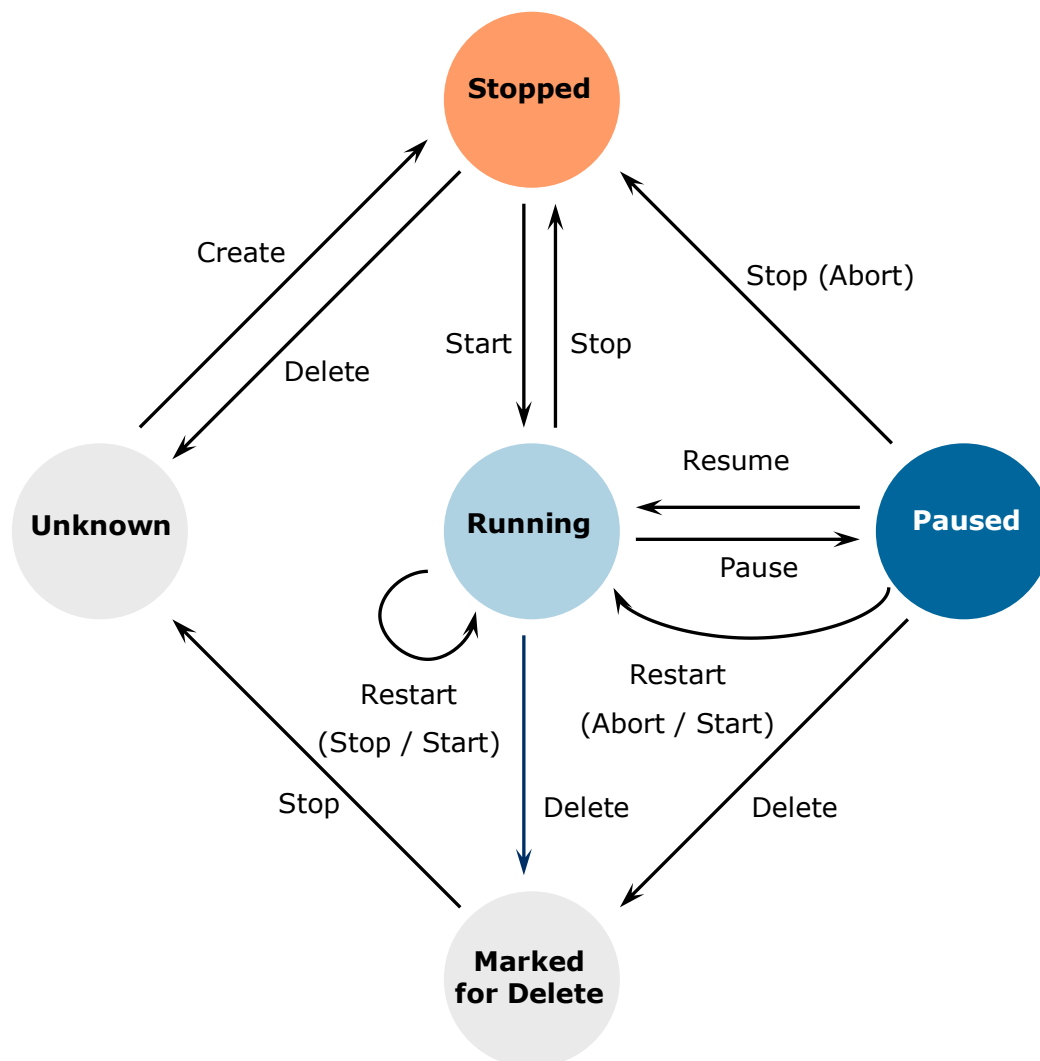
1. The log file of the service. This log file contains entries about the service itself. It is created in the same directory as where the executable of the service resides. The log file is locked by the service as long as the service is running.
 - The log file contains general messages such as:
 - Service thread for directory c:\PdfPrintSvr started.
 - Thread for directory c:\PdfPrintSvr terminated.
 - Error messages such as:
 - * Error 0 while opening file c:\PdfPrintSvr\Jobs\Job-01C5EE97-6F2667EC_document.pdf.
2. For each document which could not be processed, there is an error log file created. The log file is written to the folder *Log* and has the same file name as the print job, with extension ".txt". There is no error log available if a document cannot be opened (e.g. is not a PDF document).

5.3 State Diagram of the Service

The 3-Heights PDF Printer Service behaves as described in the state diagram below:

If "Stop" is called when the service is in the state "Paused", the current job is aborted. This means the current page is finished processing, then the job is terminated.

If "Stop" is called when the service is in the state "Running", the current job (all pages) is finished. Then the service is stopped.



5.4 Using the PDF Print Service

Printing Single PDF Files

When the service is running, it monitors watched folders. When a PDF document is placed into a watched folder, the PDF Printer Service does the following:

1. Grab the file, give it a unique file name by adding a job number prefix and move it to the subfolder *Jobs*.
2. When a job is printed successfully, the PDF file will be moved to the folder *Succeeded* or deleted, depending settings.
3. When a job fails to print, e.g. when the file is not a valid PDF document, the file will be copied to the folder *Failed* or deleted depending on settings

These subfolders are created automatically, and used by the 3-Heights™ PDF Printer Service. They are hidden folders and should not be modified, nor should any files be copied into any of them directly.

Printing a List of PDF Files

Alternatively a list of PDF files can be merged into one print job. This is done by copying a control text file (with the file extension ".txt") into a watched folder. This text file contains a list of PDF files. For example:

File: *printjob1.txt*

C:\documents\file1.pdf	1 st document
C:\documents\file2.pdf	2 nd document

This will print the two referenced files, and move them to the *Succeeded* or *Failed* folder accordingly to the "AutoDelete" property. The original file(s) will not be moved or deleted.

The use of such a list is particularly useful to maintain a predefined order of printing, since all files are merged into one print job.

The account under which the PDF Printer Service is running needs to have access to the files listed in the text file. Therefore it is suggested to avoid mapped folders.

Individual parameters can optionally be defined within the control file on the line prior to the file name. Example:

-pg 1 1	Setting of 1 st document
C:\documents\file1.pdf	1 st document
-pg 2 3	Setting for 2 nd document
C:\documents\file2.pdf	2 nd document

The following switches are not supported in the control file:

-w -wd -p

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The following switches are only valid when set before the first input file:

-c -cl -cm -dl -e
 -file -load -pri

Example 1: Using Multiple Watched Folders

Let's take the configuration file from the chapter *Editing the configuration file "pdfprintsvr.ini"*.

```
[PdfPrintSvr]
```

```
PollingInterval=5000
```

```
AutoDelete=True
```

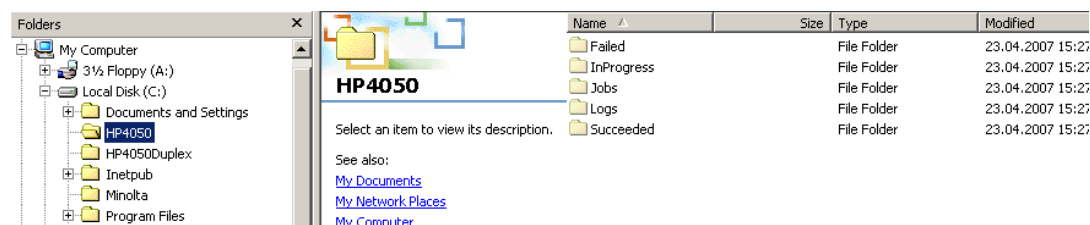
```
Threads=3
```

```
Thread1=-p "HP LaserJet 4050 Series PS" -w C:\HP4050
```

```
Thread2=-p "HP LaserJet 4050 Series PS" -w C:\HP4050Duplex -d 2
```

```
Thread3=-p "MINOLTA-QMS magicolor 2350" -w C:\Minolta
```

- This file creates three watched folders: *C:\HP4050*, *C:\HP4050Duplex* and *C:\Minolta* as shown in the image below:



- Each of these folders has five subfolders: *Failed*, *InProgress*, *Jobs*, *Logs* and *Succeeded*.

- The polling interval is 5000ms (default is 1000ms). This means about every five seconds it is checked if a file has been dropped into any of the watched folders.

- A user can now copy files into any of the directories *C:\HP4050*, *C:\HP4050Duplex* or *C:\Minolta*. (for example via Terminal Server Session).

- The 3-Heights™ PDF Printer Service grabs the file and processes it with the appropriate options. If the user places a PDF file into the directory *C:\HP4050Duplex*, it first is moved to *C:\HP4050Duplex\Jobs*, and renamed by adding a 16 character time stamp prefix, then printed to the printer "HP LaserJet 4050 Series PS" with duplex mode, and is then deleted.

- The PDF files for each watched folder are printed with a first-in, first-out priority order. However threads among them, do not have a priority order (which is intended for a multi-threaded environment).

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Example 2: Using Watched Folders With Sub Directories

Here is an example of a configuration file that starts two threads, one with two, the other with three sub folders. In total there are seven watched directories:

```
[PdfPrintSvr]
```

```
AutoDelete=False
```

```
Threads=2
```

```
Thread1=-p "HP 4250 PCL" -w C:\PdfPrintSvr\HPLJ4250 -f
```

```
Folders1=2
```

```
Folder1.1=-p "HP 4250 PCL" -w C:\PdfPrintSvr\HPLJ4250\Page1 -pg 1 1
```

```
Folder1.2=-p "HP 4250 PCL" -w C:\PdfPrintSvr\HPLJ4250\All
```

```
Thread2=-p "Canon LBP3200" -w C:\PdfPrintSvr\Canon3200
```

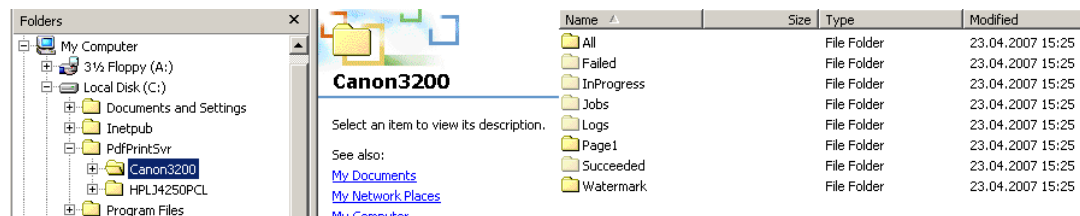
```
Folders2=3
```

```
Folder2.1=-p "Canon LBP3200"-w C:\PdfPrintSvr\Canon3200\Page1 -pg 1 1
```

```
Folder2.2=-p "Canon LBP3200"-w C:\PdfPrintSvr\Canon3200\All
```

```
Folder2.3=-p "Canon LBP3200"-w C:\PdfPrintSvr\Canon3200\Watermark -wo 90  
90 -wt "12"
```

After the service is started, the following file structure will be created:



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6.1 Service Control Commands

These options are used to control the service. The *create* and *delete* functions require administrator rights. The *start* and *stop* functions require operator rights.

-c Create Service

The print service is created using the option -c.

```
C:\> C:\pdf-tools\bin\pdfprintsvr -c
```

Important: It is essential that <i>pdfprintsvr.exe</i> be on a non-mapped drive.
--

-d Delete Service

The PDF Print Service can be deleted with the option -d.

```
pdfprintsvr -d
```

-s Start Service

Once created, the print service can be started with the option -s.

```
pdfprintsvr -s
```

-t Stop Service

To stop the service, use the option -t.

```
pdfprintsvr -t
```

If "stop" is called while the service is "running", the current job (all pages) will be finished, after that the service is stopped.

If the service was "paused" before calling "stop", the current page will be finished processing. After that page, the job is aborted.

-a Pause Service

This option pauses the service.

```
pdfprintsvr -a
```

-o Continue Service

This option resumes the service.

```
pdfprintsvr -o
```

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-q Query Current Status of Service

This option returns the current status of the service.

```
C:\> pdfprintsvr -q
```

```
The service starts automatically during system startup.
```

```
The service is stopped.
```

```
[PdfPrintSvr] QueryService: The operation completed successfully.
```

-x Run as Executable

With this option, the PDF Printer runs as an executable instead of as a Windows Service. It provides the same functionality as long as the executable is running.

```
pdfprintsvr -x
```

6.2 Listing and DeviceMode Options

These options provide a list of printers and their capabilities. The values obtained through these options can be used the configuration file.

-ds Edit and Save Device Settings to a File

This option opens the device setting of the printer driver and saves the setting to a file.

```
pdfprintsvr -ds dm.dev
```

The printer (if not the default printer) must be specified before this option, using the command -p.

```
pdfprintsvr -p "HP LaserJet 4050 Series PCL" -ds dm.dev
```

(Note: The saved device mode is a binary file and is not to be edited with a text editor, it should there also not be saved with the extension .txt.)

-i List Usage

List all available options for the configuration (.ini) file.

```
Pdfprintsvr -i
```

-l List Available Printers

To get a list of all available local printer, use the option -l

```
pdfprintsvr -l
```

This will list all available printers, the list could look like this:

```
1: "HP LaserJet 4050 Series PS (FILE)"
```

```
2: "HP LaserJet 4050 Series PS"
```

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```
3: "HP LaserJet 4050 Series PCL"
```

```
4: "3-Heights(TM) TIFF Producer"
```

```
5: "3-Heights(TM) PDF Producer"
```

To get a list of all available printer on a host use the option -l followed by the name of the host

```
pdfprintsvr -l \\myhost
```

This will list all available printers on the host "myhost", the list could look like this:

```
1: "\\myhost\MINOLTA-QMS magicolor 2350"
```

```
2: "\\myhost\HP LaserJet 4050 Series PCL"
```

-lb List Bins for a Specific Printer

This option lists all available bins that are installed on a specific printer. The printer's name must be known. If no printer is specified, the bins of the Windows Default printer are listed:

```
pdfprintsvr -lb
```

To list the bins on another printer, specify the printer using the option -p

```
pdfprintsvr -lb -p "MINOLTA-QMS magicolor 2350"
```

The returned list contains all available bins with the corresponding number. For example like this:

```
15 Form Source
```

```
262 Automatic Selection
```

```
261 Automatic Selection
```

```
260 Tray 1
```

```
259 Tray 2
```

```
258 Tray 3
```

```
257 Tray 4
```

```
5 Envelope
```

-ld List Duplex Modes

The Duplex Modes can be listed using the option -ld. Note that on some printers drivers the duplex unit must be installed, or it won't be listed. The following command returns a list of the available duplex modes of the Windows Default printer:

```
pdfprintsvr -ld
```

The list could look like this:

```
5310: Custom duplex mode
```

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-lm List Media Types

List all media types supported by a printer.

```
pdfprintsvr -lm -p "HP LaserJet 4050 Series PS"
```

The list could look like this:

```
1 Plain Paper
266 Thin Paper
265 Thick Paper
264 Thicker Paper
263 Bond Paper
262 Envelopes
```

-ls List Paper Size for a Specific Printer

This option lists all available paper sizes that are supported by a specific printer. The printer's name must be known. If no printer is specified, the available paper sizes of the Windows Default printer are listed:

```
pdfprintsvr -ls
```

To list the available paper sizes on a specific printer, use the option -p to select a printer.

```
pdfprintsvr -ls -p "HP LaserJet 4050 Series PS"
```

Then a list like the following will show all available paper sizes with a corresponding number:

```
1 Letter 8 1/2 x 11 in
5 Legal 8 1/2 x 14 in
7 Executive 7 1/4 x 10 1/2 in
9 A4 210 x 297 mm
11 A5 148 x 210 mm
13 B5 (JIS) 182 x 257 mm
121 Custom paper
122 Custom paper
123 Custom paper
124 Custom paper
125 Custom paper
126 Custom paper
32767 Custom paper
```

6.3 Printer related Configuration Options

All configuration options are set in the configuration file *pdfprintsrv.ini*. Some of the parameters need first to be retrieved using the listing options (see previous chapter).

If an option is set multiple times, the last instance set is valid.

-b Select the Bin

To select a bin use the option `-b` followed by the corresponding number. The default bin numbers are listed in the Appendix. The option `-lb` lists custom bins, however these custom numbers may be different for different printer drivers for the same printer. Which means the number of the bin may not correspond to the physical bin number of the printer.

It is suggested to use the default bins. Use the custom bins only if the defaults do not work.

When not printing on the Windows Default printer the printer name must also be specified:

`-b 1`

-c Set Number of Copies

To print more than one copy of a document use the option `-c` followed by the number of copies you want to print. To print three copies the command looks like this:

`-c 3`

-cl Collate Mode

Enable (`1`) or disable (`0`) collate mode (if supported by the printer). Collate refers to grouping copies in output trays.

`-cl 1`

-cm Copy Mode

This option sets the copy mode. There are two modes:

`0` Repeat Page Mode (Default)

`1` Repeat Document Mode

In the Repeat Page Mode, every page is copied as many times as copies are selected, then the next page, etc. This mode creates small spool files.

In the Repeat Document Mode, all pages of the first copy are printed, then all pages of the second copy, etc. In this mode the pages are "sorted", but the spool file can be much larger.

`-cm 1 -c 2`

-d Print Duplex

The printer driver must have the duplex mode installed.

With the option -d, the duplex mode can be specified. It is suggested to use the default duplex modes:

- 1 Simplex (Default)
- 2 Vertical Duplex
- 3 Horizontal Duplex

-d 2

If the default modes do not work, then try a custom duplex mode. The list of all custom duplex modes can be received using the command

```
pdfprintsvr -p "-- your printer here --" -ld
```

-dl Load Device Settings

This option loads a device mode setup, which was previously saved on a file using the option -ds on the command line.

```
-dl dm.dev
```

-e Use EMF Instead of RAW Spool Files

This option creates an EMF file which is useful in a network environment. Instead of locally creating a (large) RAW file and send it over the network, the file is sent as EMF and converted to a RAW file by the printer driver at the remote location.

RAW is with respect to the printer language. If "RAW" is used for PCL printer, a PCL file is generated, if RAW is used for a PS printer, a PS file is generated. The printer device always needs a RAW file.

-jw Wait until the job is completed

This option instructs the tool to wait until the spooler reports that the job is done. This switch is sometimes needed in conjunction with virtual printer drivers which require that temporary installed font resources are being retained until the job has finished.

If the input file contains embedded fonts and their use is not disabled and the printing is done locally then the wait function is enabled by default. The option enables the wait function unconditionally.

-o Set Paper Orientation

This option sets the paper orientation. The default value is -1. The allowed values are:

- 2 Automatic Mode. The page is placed to best fit the paper.
- 1 Printer Default. The values set in the printer driver are applied.
- 1 Portrait

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2 Landscape

Example:

`-o 1`

-p Select a Printer

When not specified otherwise, the Windows Default printer is used to print the PDF documents. To select a printer, one first needs to know its exact name. The name can be determined using the option `-l`.

It is required that the printer driver do not pop-up a message box.

When the name is known, use the option `-p` followed by the name:

`-p "HP LaserJet 4050 Series PS"`

Or for a remote printer:

`-p "\\myhost\MINOLTA-QMS magicolor 2350"`

There are two types of remote printers:

1. The printer is connected to a remote host (or is a network printer and its own host), and the printer driver is installed or shared on the local machine. These are the remote printers which are listed by the option `-lb \\host`.
2. The printer and the printer driver are on a remote host. These are the remote printers, which are not listed by the option `-lb \\host`.

By default the PDF Print Service is running under the LocalSystem account. The LocalSystem has permission rights to print to local and shared remote printer drivers (1.), but not to remote printer drivers (2.).

In order to print to remote printer drivers, the account under which the service is running needs to be changed to an account which has the appropriate permission rights on the remote systems. This can be done in the Services Windows by right clicking the PDF Print Service and choose properties and then select the user in the "Log On" menu.

For printing via HTTP see chapter "Internet Printing".

-pri Set the Priority of the Print Job

This switch allows for adjusting the priority of the print job. The parameter passed as argument to the switch must be a value from 1 (lowest) to 99 (highest). The default is inherited from the printer preferences, which is normally set to 1.

Example to grant the print job priority = 2.

`-pri 2`

The exact behavior of jobs with different priorities depends on the settings in the printer properties tab "Advanced".

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- Radio button *"Spool print documents so program finishes printing faster"*:

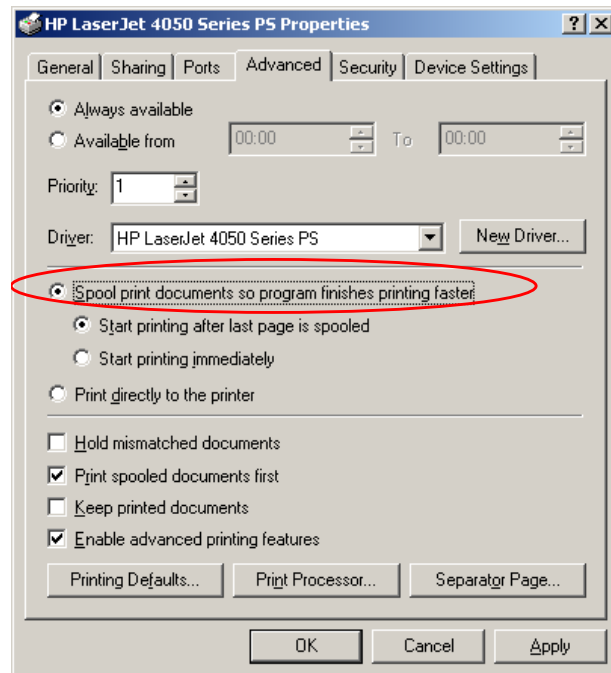
This must be checked (circled in red in the screenshot). Otherwise, i.e. if printing directly to the printer, the priority has no impact.

- Radio button *"Start printing after last page is spooled"*:

This means among all jobs which are completely spooled, the job with the highest priority is printed next.

- Radio button *"Start printing immediately"*:

This means among all jobs which have at least one page spooled, the job with the highest priority is printed next.



-s Select Paper Size

To select a paper size, the name of the printer and the number that represents the paper size must be known. To determine the name of the printer use the option `-p`, to determine the number representing a paper size use the option `-ls`. If no printer is specified, the Windows Default printer is selected. To select the paper size, use the option `-s` followed by the paper size number:

`-s 9`

When no paper size or `-s -1` is specified, the default paper size of the printer is selected.

When the paper size `-s -2` is specified, the 3-Heights™ PDF Printer calculates the paper sizes of the pages. It transmits the paper size to the printer, which then selects the paper from the appropriate bin automatically. When setting `-s -2` the switch `-b` is ignored.

-sm Largest Available Paper Size

Set the maximum paper size that is supported by the automatic paper size feature (`-o -2`). Any paper size that exceeds the paper width or height is excluded. The paper sizes are represented by an inter value as returned `-ls`; see also Appendix Paper Sizes.

Example: If MaxPaper is set to 66 (A2), then larger paper sizes, such as A1, are ignored by the automatic paper selection.

-sl Set the list of approved paper sizes

Set the list of paper sizes used, when selecting a paper size automatically (e.g. when option -s -2 is used).

The value is a comma-separated list of paper numbers. Valid paper number values are those listed at the beginning of the strings returned by -ls (also see chapter A.3 Paper Sizes).

Example: set the approved paper sizes to A3, A4 and A5

```
-s -2 -sl "8, 9, 11"
```

-sxy Scale the Page by a Factor

After the page has been scaled to fit the paper size an additional scaling can be specified by using this switch. The scale factor is given in percent. A number less than 100 percent shrinks the page. A number greater than 100 percent expands the page. This switch can optionally be combined with the -f switch.

Example: Fit the page to the paper and reduce the page size to 90 %

```
-s 9 -f -sxy 90
```

6.4 Service Configuration Options

Configuration File *PdfPrintSvr.ini*

The .ini configuration file defines the setting for the watched folders. It is read upon starting the service.

<code>[PdfPrintSvr]</code>	required
<code>Autodelete=...</code>	optional, <code>true</code> or <code>false</code>
<code>AutodeleteAll=...</code>	optional, <code>true</code> or <code>false</code>
<code>LogPath=...</code>	optional, if used must be a path like <code>C:\mypath\log</code> or the keyword <code>EventLog</code>
<code>PollingInterval=...</code>	optional, value in milliseconds, default <code>1000</code>
<code>JobPrefix=...</code>	optional, <code>true</code> or <code>false</code>
<code>LogLevel=...</code>	optional, <code>0</code> or <code>1</code>
<code>Threads=n</code>	required
<code>Thread1=-w ...</code>	required
<code>Thread2=-w ...</code>	
<code>Folders1=m</code>	optional
<code>Folder1.1=-p ...</code>	optional
<code>Folder1.2=-p ...</code>	optional
<code>...</code>	
<code>Folder1.m=...</code>	There must be exact as many folders (Folder1.*) as defined in Folders1=m.
<code>...</code>	
<code>Threadn=...</code>	There must be exact as many threads as defined in Threads=n.

Example:

```
[PdfPrintSvr]
Autodelete=true
JobPrefix=false
Threads=2
Thread1=-p "HP LaserJet 4050 Series PS" -w C:\PdfPrintSvr\4050PS
Thread2=-p "HP LaserJet 4050 Series PS" -w C:\PdfPrintSvr\4050PS_WM -wo
100 100 -wt "TEST TEST TEST TEST" -f
```

For a sample with folders, see chapter "Create watched Sub Folders".

-band Using Banding for Bitmaps

The service per default uses banding for images with a size larger than 64kB. This ensures that the image processing in the printer device does not run out of memory. If the printer still runs out of memory the maximum size of the bitmaps can be decreased.

-cms Select a CMS Engine

This switch allows to specify the name of the Color Management System (CMS) engine used to convert colors from one color space to another. Valid names are:

- none
- neugebauer
- msicm (which is the default on Windows)
- lcms (which is the default on Unix systems)

The name can also be a file name containing a set of customized Neugebauer parameters.

`-cms neugebauer`

-cn Center the Page

This option centers the page horizontally and vertically. Without this option, the page is placed in the upper left corner of the paper.

-co Color Mode

This options sets the color mod. The supported values are monochrome (1) and color (2).

`-co 1`

-f Scale Page to Fit Page Size

The options -f scales the PDF to fit the page. The page is resized so that both, page width and height, fit on the printable part of the paper supported by the printer device. The relation width to height remains unchanged.

If this option is not set, the size of the page remains unchanged. If part of the content is outside the printable area (i.e. close to the border of the page) it will not be printed.

To print Letter 8½ x 11 inch on an A4 paper or the other way around the option -f fits perfectly. When used to print an A4 PDF on a 8½ x 14 inch paper the printed document will fit the width, but not the length, since otherwise it would be stretched.

-f2 Insert Filler Page

This switch instructs the printer to conditionally insert a filler page before the next document is printed in order to start the next document on an even page number.

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There is an equivalent option `-f4` available, which inserts filler pages, so the next document starts on page number that is a multiple of four. This can be used when printing two pages on one paper.

-file Print to a File

A print job can be printed to a file in two different ways.

The option `-file {filename}` can be applied in the `pdfprintsvr.ini` configuration file to print a file instead of the sending the print job to a physical printer. This option overrules the port configured in the printer driver. (Note that all print jobs will go to the same file name and therefore overwrite each other.)

The port of the printer driver points to an absolute file name. (Note that setting the port to `FILE` causes a pop-up dialog asking for the file destination, this pop-up message will likely not be visible as the service is usually running on a different machine and/or under a different user, such as `LocalSystem`.)

-fo Enable Options by File Name Convention

If this switch is set for a watched folder, the service parses the file name for options. This means options such as `"-f"` or `"-pg 1 1"` can be contained in the file name directly rather than in the configuration for a watched folder. Spaces are to be replaced by the underscore character. Options set by file name convention are combined with other options. The precedence from lowest to highest is: watched folder options, job control file options, file name convention options.

The following switches are not supported by the file name convention: `-w`, `-wd`, `-p`, `-dl`, `-file`, `-load`.

Example: Have a look at the configuration file below: Thread 1 prints only the first page (`-pg 1 1`) and scales the page to fit the paper (`-f`). Thread 2 prints all pages and scales the pages to fit the paper, additionally it parses the file names for additional options (`-fo`).

```
[PdfPrintSvr]
```

```
AutoDelete=True
```

```
Threads=2
```

```
Thread1=-p "HP LaserJet 4050 PS" -w e:\HP4050 -pg 1 1 -f
```

```
Thread2=-p "HP LaserJet 4050 PS" -w e:\HP4050-FileNameConvention -f -fo
```

If `"-pg_2_2_file1.pdf"` is the file name of a PDF document with two pages and it is dropped into the watched folder `"e:\HP4050"`, it is scaled when printing and only page 1 is printed. If the same file is dropped into the second watched folder, the file name convention `"-pg 2 2"` takes precedence over the watched folder options and only page 2 is printed, fit page to paper size is applied.

-j Use JPEG Compression

If the printer supports JPEG compression, this option can be used to send the images inside a PDF with JPEG compression, thus allowing a faster printing. It also mean that

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images lose some information (which normally is not visible though). If the printer does not support JPEG compression, it recognizes this and the option is ignored.

-load Preload Library

If a printer driver calls a system library for each page several times during the print process it has a significant effect on the print processing time. With the switch `-load library_path\library` this library can be preloaded in order to optimize the runtime. Please note this behavior is caused only by some printer drivers. Well-designed printer drivers do not require this option.

Which system DLLs are loaded several times by the printer driver can be figured out by running the print command within a current version of the Microsoft tool Dependency Walker.

Usage of Microsoft Dependency Walker for this purpose:

- Open the Microsoft Dependency Walker (e.g. Version 4.1.3790)
- Menu "File" -> "Open", Select *pdfprintsrvr.exe*
- Menu "Profile" -> "Start Profiling".

Set -x in the field "Program Arguments".

In the field "Starting directory" the installation directory of the 3-Heights™ PDF Printer Services has to be inserted.

Check "Hook the process to gather more detailed dependency information."

Check "Log LoadLibrary function calls."

Uncheck all others.

Press the "OK" button.

- Print a file.

Search the log for DLLs which are loaded multiple times.

-m Rendering Mode

There are two rendering modes: 0 (default) is the fast mode, and 1 is the accurate mode.

The fast mode is the recommended mode for printing to any **physical printer device** such as a laser printer, or ink jet printer. It uses the Windows GDI for rendering. This mode is generally faster and creates smaller spool files than the accurate mode.

The accurate mode is intended for **virtual printers** such as a TIFF printer. It uses the Windows GDI+ for rendering. This mode allows for image filtering, sub-pixel rendering and anti-aliasing. It should not be applied for physical devices, such as a laser printer, due to the fact that those devices do not support the above features. Using the accurate mode creates generally larger spool files than the fast mode.

User's Tip: The rendering mode is not to be mixed up with the printing quality `-q`. The fast mode is optimized for printing to physical devices and creating a high quality

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spool file with a small file size.

-o1 Convert to Type1

Convert embedded fonts to Type1 fonts (PostScript fonts).

-o9 Force Windows 9x Compatibility

This options enforces the use of Windows 9x compatible printer driver interface commands. This can help with compatibility issues with older printer drivers.

-oa Print Form Fields (Annotations) Only

With this switch only form fields and annotations are printed without the underlying page content.

-ob Apply Pre-Rendering

This option pre-renders the page and sends bitmaps to the printer device. This option can be used as a work-around when a printer device fails to render the content correctly. If fonts are not converted correctly, the options -ot and -o1 should be preferred, since they provide a better result and smaller spool file.

-oc Disable Black Point Compensation (BPC)

This switch disables the black point compensation feature when converting colors e.g. from CMYK to RGB.

-od Disable Back Buffer

The 3-Heights™ PDF Printer uses a back buffer to simulate a series of types of transparencies. This back buffer requires a lot of resources. Disabling it using the option -od can improve the printing speed dramatically.

-oe Do not use Embedded Fonts

With this option, all embedded fonts are ignored. As replacement fonts, fonts from the operating system fonts folder are used, which is usually C:\Windows\fonts.

-ofp Use Pre-Installed Fonts

When using this switch embedded fonts are replaced by fonts installed in the operating system. Only non-symbolic fonts that have an equal name are replaced. The default behavior is that all embedded fonts are used.

-oi Always Use Fast Mode for Images

Use fast mode rendering for images even in accurate mode. Using the accurate rendering mode (-m 1) in combination with -oi prints all non-image content in accurate mode and all images in fast mode. If in fast mode (-m 0) then the switch provides a workaround for legacy printer drivers which cannot process banded images.

-oj Disable Image Filtering

If images need to be down-sampled, rotated or skewed in order to match the device resolution then the transformation is accomplished using a filter by default. This option disables filtering in these situations.

-oo Convert Fonts to Outlines

Convert fonts to outlines before rendering. This means the spool file does not contain fonts anymore, but graphic paths instead. This option can resolve font related issues that can be caused by inappropriate device fonts or the use of EMF.

-op Disable Patterns

This option disables patterns.

-ops Disable Direct PostScript Injection

This is option disables direct PostScript injection. Instead all PostScript code is generated by the printer driver. This can help with compatibility issues with older printer drivers.

-os Convert Strokes to Filled Paths

This switch converts strokes to filled paths.

-ot Convert to TrueType

This options converts embedded fonts to TrueType fonts. This option is recommended for PCL printers, it is not recommended for PostScript printers.

-ot0 Convert embedded Type1 / OpenType to TrueType fonts

This switch inhibits the conversion of embedded Type1 fonts to TrueType fonts. It is mainly used for diagnostic purposes.

-ou Use Unicodes Instead of Glyph-Ids for Embedded Fonts

This option is to create spool files with text that is optimized for post-processing.

-pg Set the Page Range

This options allows to print a specific range of the PDF document. The following command prints pages 2 to 5.

```
-pg 2 5
```

-pw Print an Encrypted PDF File

A PDF document that has a user password (the password to open the document) can only be printed when either the user or the owner password is provided. The password can be provided using the option -pw followed by the password.

```
-pw mypassword
```

-q Set the Quality

This option sets the quality of the print. The supported values are:

- 1 Draft
- 2 Low Quality
- 3 Medium Quality
- 4 High Quality

Example:

```
-q -4
```

-r Set the Rotation

With this option the pages are printed in the same orientation as when viewed. Without this option, the pages are sent to the printer with their original rotation.

-rm Rotate Pages to a Given Orientation

With this switch the page rotation can be set to 'Portrait' or 'Landscape'. In contrast to the switch -o, the page is rotated before being sent to the printer whereas the switch -o specifies the orientation of the physical paper.

Supported arguments are "p" for portrait, and "l" for landscape.

```
-rm p
```

-tt TrueType Font Handling

With this option it can be configured whether the printer driver shall load pre-installed fonts when printing PDF files that use TrueType fonts. Default value is 2. The allowed values are:

1: Print bitmaps. The glyphs of the text are rendered as bitmaps. This option is useful for reducing the spool file size if the PDF document uses a lot of different fonts and has few pages.

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2: Download soft fonts. Fonts are copied from the font directory of the operating system to the printer. If the PDF document uses a lot of different fonts, a large amount of disk space, printer memory and a long download time for loading the font to the printer is required. This option is useful if the PDF document has much text but uses only a few fonts.

3: Use device fonts. The built-in fonts of the printer are used for the rendering process. A significant reduction of the spool file can be achieved with this option.

`-tt 3`

-w Specify the Path to the Root Directory

This option sets the path to the root directory. This parameter must always be the first parameter of a thread.

`-w D:\Path`

Note that the service supports path lengths including file name of up to 258 characters. This includes the 21 characters of the job ticket. If a file name exceeds this value, its file name is truncated at the end of the file name and before the file extension. It is therefore suggested that watched folder names are kept reasonably short.

-wd Specify the Drop Path

This options sets the path of the drop directory. If this option is not set, the root directory is equal to the drop directory. The drop directory is the watched folder, where input files are picked up and processed by the service.

The drop directory can be at any existing (network-) location. It is required that:

- The directory exists (it is not automatically created unlike the root directory)
- The user under which the service runs has access permissions to this directory

`-wd D:\Path\DropFilesInHere`

-wfs Process only files with certain extensions

By default, the service tries to process all files dropped into the drop-in folder, regardless of the extension. With this option, the processing can be restricted to a set of known file extension.

Example: Restrict the processing to JPEG and PNG files.

`-wfs .jpeg.jpg.png`

-wfi Ignore files with certain extensions

By default, the service tries to process all files dropped into the drop-in folder, regardless of the extension. With this option, files with certain file extensions can be ignored.

Example: Ignore temporary files.

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```
-wfi .temp.tmp
```

-wh Set Page Width and Height

This option asks the printer driver to select a paper size that is at least as large as the defined dimensions and limit its printable area. If no paper size is available, this option limits the printable area of the currently set default paper size.

Example: If the option `-wh 400 400` is set and the printer driver has the paper sizes A4, A3, A2 and A1 available, it should select the paper size A2 (420 by 594 millimeters) and only a 400 by 400 millimeters section is printable. However sometimes printer drivers do not select the correct paper size, and instead just keep the currently set default paper size.

-xy Set the Page Offset

This option allows to specify a page offset in the horizontal and vertical axis. The units are 1/100 millimeters.

```
-xy 200 0
```

Autodelete of Successfully Printed Files

When a print job succeeded, the PDF document will be moved from the folder *Jobs* to the folder *Succeeded*. To automatically delete the successfully printed files, the value "AutoDelete" can be set to True on the *pdfprintsvr.ini* file. When set to False, the files will remain in the folders *Succeeded*. Documents which fail to print are not deleted.

```
[PdfPrintSvr]
```

```
AutoDelete=True
```

To delete failed documents as well use the following setting:

```
[PdfPrintSvr]
```

```
AutoDeleteAll=True
```

Create Watched Sub Folders

The 3-Heights™ PDF Printer Service supports watched sub folders. A watched (root-) folder represents a thread. All sub folders belong to the same thread. This allows for saving memory and creating a more compact directory structure.

The root folder and all its sub folders can have individual settings. Any output (Log, Succeeded or Failed) are shared in the root folder.

If a thread is to have watched sub directories, the amount of sub directories is defined in the configuration file using a statement:

```
Folders{Thread Number}={Amount of sub folders}
```

the individual sub folders are defined using a statement:

```
Folder{Thread Number}.{Sub Folder Number}={Equal statement as for root folder}
```

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The sub folders to not inherit any setting from the root folder. Therefore the printer driver name must be provided in the sub folders as well. See also "Example 2: Using watched folders with subdirectories" in chapter 2.

Example:

```
[PdfPrintSvr]
AutoDelete=False
Threads=1
Thread1=-p "printer driver name" -w C:\Root
Folders1=2
Folder1.1=-p "printer driver name" -w C:\Root\FitPage -f
Folder1.2=-p "printer driver name" -w C:\Root\PrintPage1 -pg 1 1
```

Delayed Delete of Files

Documents that are processed and moved into the folders *Succeeded* or *Failed* can be deleted with a delay. The delay is defined with the statements *KeepTimeForSucceeded* and *KeepTimeForFailed* in the configuration file. The units are hours. It is required to set *AutoDelete* to false. The following configuration deletes the successfully spooled files after 1 day and the failed documents after 2 days.

```
[PdfPrintSvr]
AutoDelete=False
KeepTimeForSucceeded=24
KeepTimeForFailed=48
```

The times is absolute, which means restarting the service has no influence on the time of deletion (other than the files are not deleted while the service is shut down).

Job Number Prefix

At the time when a document is copied from the watched folder to the *Jobs* sub folder, it is renamed and added a 21 character prefix containing a time stamp: Job-{8 digits}-{8 digits}_ Something like: "Job-01C61DD4-E72E1BCE_". The job number prefix ensures the same document (name) can be processed multiple times.

Adding the prefix can be prevented with the following line in the configuration file:

```
[PdfPrintSvr]
JobPrefix=False
```

Not adding a prefix makes sense if printing to a virtual printer and the job name is directly converted to the file name. Keep in mind though that if two files with the same name are printed, the later one will overwrite the previous.

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Logpath

Log-messages created by the service are by default written to the sub-directory *log*. To alter the directory, add a line similar as shown below to the configuration file:

```
[PdfPrintSvr]
```

```
LogPath=C:\path\log
```

Messages created by the service can be added to the system's application event log instead of written to a log file. This is achieved by adding the following line to the configuration file:

```
[PdfPrintSvr]
```

```
LogPath=EventLog
```

The system's application log event will then log messages similar as shown below:

- CreateService: The operation completed successfully.
- StartService: The operation completed successfully.

Note that the messages are only fully accessible while the service is created. Otherwise a message as shown below is displayed:

- The description for Event ID (1) in Source (PdfPrintSvr) cannot be found. The local computer may not have the necessary registry information or message DLL files to display messages from a remote computer. The following information is part of the event: DeleteService: The operation completed successfully.

Polling Interval

The polling interval defines the time in milliseconds that the polling-thread pauses between two polls. The time passing until the same watched folder is polled again (maximum pick-up time) is: The value of PollingInterval plus the actual time it takes to poll all watched folders. The higher the polling interval, the lower the network traffic, and the longer it takes until documents are picked up.

Suggested values for the polling intervals are 1000 to 10000 milliseconds.

```
[PdfPrintSvr]
```

```
PollingInterval=5000
```

Handle Color Profiles

The 3-Heights PDF Rendering Engine works in the RGB color space. For color conversions, the two color profiles in the folder *Icc* are used. Color profiles can be downloaded from the links provided in the directory *Icc*. The color profiles that are named *CMYK.icc* and *sRGB.icm* are applied.

In order to change the current color profile, overwrite these two color profiles with new color profiles.

If no color profile is available, the conversion is done algorithmically.

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6.5 Configure Log File

The log file, which is kept in the directory where the executable resides, by default logs documents that cannot be processed successfully. In order to also log successfully printed documents, adjust the setting for LogLevel=n. (0: All messages, 1: Error messages only.)

```
[PdfPrintSvr]
```

```
LogLevel=0
```

6.6 Watermark Options

The PDF Print Service has the option to place a watermark on the pages. The watermark will be printed as a vector graphic and will therefore not be editable if the output is sent to a file. Only one watermark text can be printed and it is the same for all pages. To print different watermark texts, the print job needs to be divided into jobs with different logos.

The watermark content (text or image) must always be specified last, i.e. after all the settings for position, color, size, etc. are made.

Example: Correct sequence: Set font to bold (-wb) and set position (-wo) to 50 points from left and 500 points from the top, then write text.

```
-wb 1 -wo 50 500 -wt "Bold"
```

Example: Incorrect sequence: The settings for bold (-wb) and position (-wo) have no impact.

```
-wt "Bold" -wb 1 -wo 50 500
```

-omr OMR marker string

The string specifies OMR markers which are printed on each succeeding page until the marker is changed or deleted. The syntax of the string is as follows:

Example: "0, 20, 10, 4, 15, 0, 01110011"

0: horizontal position of the first marker

20: vertical position of the first marker

10: horizontal extension of the marker

4: vertical extension of the marker

0: markers are drawn from either top of page to bottom (1) or from bottom to top (0)

01110011: Array of Boolean numbers indicating whether the marker shall be present or not

-wb Set Bold Style

Write watermark in bold text. Use the parameter 1 to turn bold on, 0 to turn bold off.

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```
-wb 1 -wo 50 500 -wt "Bold" -wb 0 -wo 50 550 -wt "Not Bold"
```

-wc Set the Color of the Watermark

This option sets the color of the watermark in RGB (Red Green Blue).

```
-wc 255 0 0 -wo 50 50 -wt RedText
```

```
-wc 0 255 0 -wo 50 50 -wt GreenText
```

-wf Set the Font and Font Size

The default font is Helvetica, size 10. This of course is rather small for watermark font. The following command uses the font "Times" with font size 242 and places it in the middle an A4 page:

```
-wf Times 242 -wo 50 500 -wt Text
```

Note that when setting a font, the size must also be specified.

-wi Set Italic Style

Write watermark in italic text. Use the parameter 1 to turn italic on, 0 to turn italic off.

```
-wi 1 -wo 50 500 -wt "Italic" -wi 0 -wo 50 550 -wt "Not Italic"
```

-wo Set the Position of the Watermark

This option must always be set or the watermark will be not be visible. The following option sets the watermark 100 points from the left border and 200 points from the top (an A4 page is 595x842 points).

```
-wo 100 200 -wt mywatermark
```

Note, that there is always a clipping border of about 14 points, which will clip text that is too close to the border.

-wp Add a Watermark Picture

Print an image or PDF as watermark. The position can be specified with the option -wo. The path to the file is specified with the option -wp:

```
-wp c:\image\mypicture.gif
```

-wr Set the Rotation Angle

Using the option -wr, the rotation angle of the watermark text can be set. The rotation axis is at the position set by the option -wo.

```
-wr -55 -wo 100 500 -wt Text -wf "" 100
```

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-wz Set the Scale Factor

Using the option -wz, the scale factor of the watermark can be set. Default value is 1.

```
-wz 1.2 -wp c:\image\mypicture.gif
```

-ws Write Outlines

Write text as outlines, i.e. stroke the text instead of filling it. Use the parameter 1 to turn outlines on, 0 to turn outlines off.

```
-wt Times 242 -ws 1 -wo 50 500 -wt Text
```

-wt Set the Text of the Watermark

This option sets the text of the watermark. If the text contains blanks, the whole text must be in quotes.

```
-wt "This is my watermark"
```

The line above will not print the text in the visual range, because the position which is required is missing, see Option -wo.

The text can contain placeholders, which can be used to insert document specific text. The following placeholders are supported:

Time, Date related placeholders:

`%ds` short date

`%dl` long date

`%dt` time

Document Attribute placeholders:

`%t` document title

`%a` document author

`%k` document keywords

`%s` document subject

`%ns` file name without path and extension

`%js` short job list name (the .txt file) without path and extension

`%jl` long job list name without path

Page Numbering placeholders:

`%pi` the current page

`%pn` the total amount of pages in the document

For example the following option will add the document's title, author and date to the watermark text:

```
-wt "watermark for the document %t written by %a, printed on %ds."
```

Or the page number:

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-wt "page %pi of %pn"

6.7 How to Handle Non-Embedded Fonts

Font Replacement Strategy

This section describes the exact behavior of font handling of the rendering engine. It is rather technical and it is not required to be understood in order to properly use the software.

The following steps are performed sequentially in the search of a font. If a font is found, the search is stopped; otherwise the next step is performed.

1. If the font is not embedded or -ofp is set:
 - a. If the font name appears in the [Replace] section in the configuration file "fonts.ini" the name is replaced and looked up in the installed font collection
 - b. if it is a standard font¹ it is replaced by the equivalent TrueType font name and it is looked up in the installed font collection
 - c. If the font name appears in the [Fonts] section in the configuration file "fonts.ini" the name is replaced and looked up in the installed font collection
 - d. If the font has "Italic" or "Bold" in its name the font without these styles is looked up in the installed font collection
2. If a font name is looked up in the installed font collection then the name compare is performed as follows:
 - a. PostScript name
 - b. TrueType name without blanks (a missing style is interpreted as "Regular" or "Normal")
 - c. TrueType name without modifications
3. If the font is embedded, it is converted to a Windows compatible font and temporarily installed. If -oe is used then the glyphs of the fonts are converted to either bitmaps or outlines². If -oo is used then the glyphs are converted to outlines only.
4. If the font is not embedded and the Unicodes are available then the nearest font from the installed font collection is tailored to the metrics of the font.
5. If the font is embedded then it is converted to outlines.
6. In all other cases the nearest font from the installed font collection is used

¹ e. g. Times–Roman, Helvetica, Courier

² The outline of a glyph is a vector graphic without any reference to the original font program.

Installed Font Collection

The installed font collection contains fonts from the directories %SystemRoot%\Fonts and "Fonts", which must be a direct sub-directory of where the product's executable resides.

The fonts and their properties are cached in a font cache, located in the files %TMP%\font-database*. It is recommended to clear the cache, if you add or remove fonts from the font directories.

Using the Font Mapping File *fonts.ini*

"fonts.ini" is a configuration file to map fonts used in the PDF to fonts pre-installed on the system. The mapping file must reside a directory named "Fonts", which must be a direct sub-directory of where the main DLL or executable resides.

The mapping file is optional. It consists of two sections: [fonts] and [replace].

Both sections are used to map fonts in the PDF to fonts in the installed font collection on the operating system. This comes into play when the font in the PDF document does not have an embedded font program, or the embedded font is not usable.

The mapping only works if the font types of the specified fonts are matching; e. g. if the font in the PDF is a symbolic font, such as "Symbol" or "ZapfdingBats", the mapped font must be symbolic too.

The section [fonts] is only considered if the font-matcher does not find an appropriate font amongst the existing installed fonts. It is suggested to only use this section.

The section [replace] is stronger and applied before the font-matcher. This means a font will be replaced as defined, even if the correct installed font is available on the system.

6.7.1.1 Syntax

The syntax of the mapping file is this:


```
[fonts]
PDF_font_1=installed_font_1,{font_style}
PDF_font_2=installed_font_2,{font_style}

[replace]
PDF_font_n=installed_font_n,{font_style}
```

PDF_font_* is the name of the font in the PDF. This name can be found in one of the following ways:

- Use any tool that can list fonts. Such as [3-Heights PDF Extract](#) or [3-Heights PDF Optimization](#). Ignore possible prefixes of subset fonts. A subset prefix consists of 6 characters followed by the plus sign. For example "KHFOKE+MonotypeCorsiva", in this case only use "MonotypeCorsiva" as font name in the mapping file.

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- Open the document with Adobe Acrobat, use the "MarkUp Text Tool" , mark the text of which you would like to know the font name, right-click it, select "Properties..."

installed_font_* is the font family name of the installed font. To retrieve this name, find the font in the Windows' font directory and open it by double-clicking. The first line in the property window displays the font family name (this may vary depending on the operating system). The font family name does not include font styles; so an example of a font family name is "Arial", but not "Arial Italic".

font_style is an optional style, that is added coma-separated after the font family name. The style is always one word. Examples of font styles are "Italic", "Bold", "BoldItalic".

6.7.1.2 Example

```
[fonts]
```

```
Ryumin-Light=MS Mincho
```

```
GothicBBB-Medium=MS Gothic
```

```
[replace]
```

```
ArialIta=Arial,BoldItalic
```

Other Ways to Deal with Text Issues

The following list provides possible work-arounds if text is printed incorrectly. Options should be tried in ascending order.

1. Using the option (*-oe*) inhibits all embedded fonts from being used in the spool file and the printer hardware. Instead the glyphs are converted to either bitmaps or outlines. Using the option (*-oo*) at the same time the conversion is restricted to outlines.
2. Using the option (*-ofp*) inhibits embedded fonts which have the same name as the corresponding installed font from being used. This option can also be used to reduce the number of fonts in a spool file if the printer hardware memory capacity is limited.
3. Pre-render the page in a bitmap and send the pre-rendered image to the printer (*-ob*). This results in large spool files.

6.8 Internet Printing

Printing via HTTP instead of the NetBIOS protocol requires the following three steps:

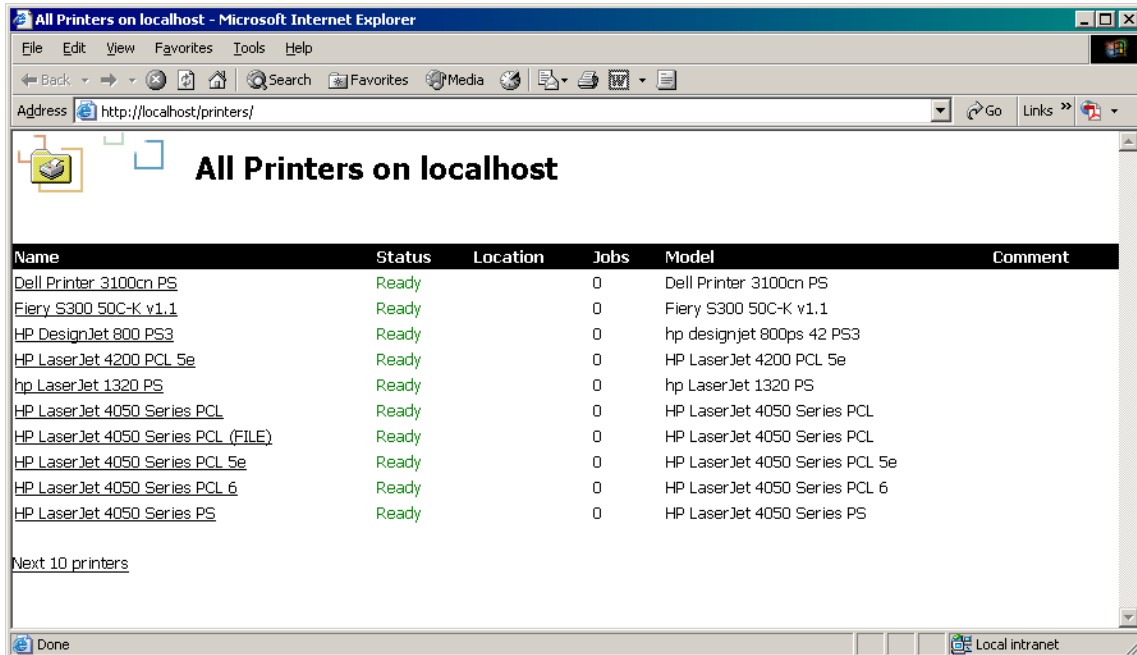
- Retrieve the name of the shared printer on the server
- Provide the network location of the printer to the client
- Select the URL as printer driver name

These three steps are described in the next three chapters.

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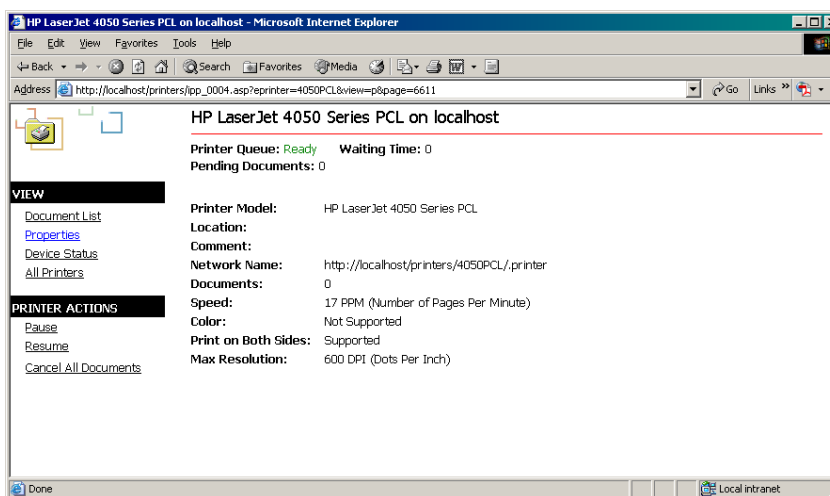
Retrieving the Printer Name

On the server where the printer is shared, open an Internet Explorer Window and type *http://localhost/printers*. Instead of *localhost*, you also write the actual name of the server, this will also work on the client if it is authorized to access the server.



This will list the available printers. Click on the one to which you want to print via HTTP.

Then click Properties on the left hand side, and you should see the properties including the network name of the printer.



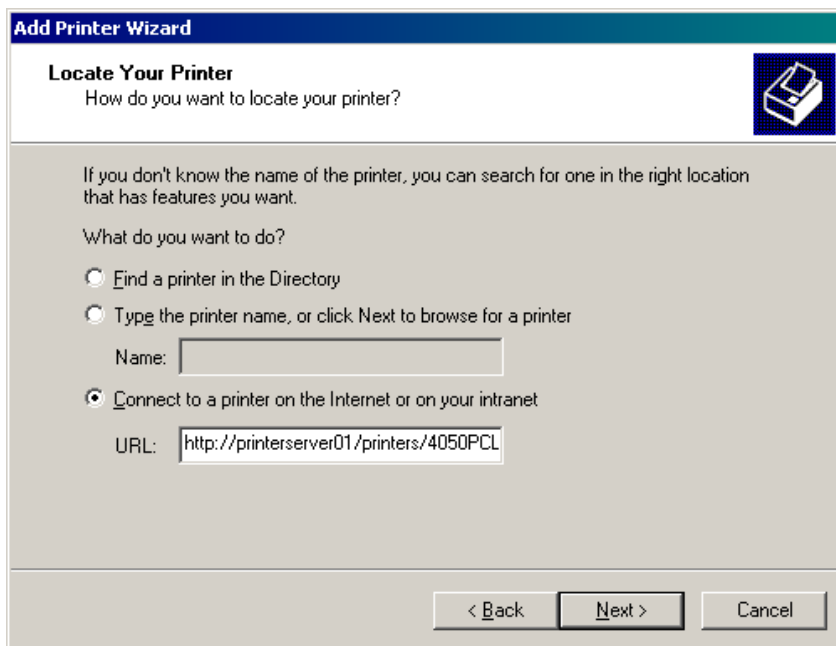
The URL can be something like *http://localhost/printers/4050PCL/.printer*. Of course *localhost* needs now to be replaced with the real name of the server, so the name could be *http://printerserver01/printers/4050PCL/.printer*.

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Setting Up the Client

Start the "Add Printer" wizard on the client system. Select Network Printer, and then "Connect to a printer on the Internet or on your intranet". As URL provide the Network name retrieved previously.

This step is required and ensures the client system can communicate with printer driver on the server. It does not install a printer driver.



The screenshot shows the 'Add Printer Wizard' dialog box with the title bar 'Add Printer Wizard'. The main heading is 'Locate Your Printer' with the subtext 'How do you want to locate your printer?'. There is a printer icon in the top right corner. The text reads: 'If you don't know the name of the printer, you can search for one in the right location that has features you want.' Below this, it asks 'What do you want to do?'. There are three radio button options: 'Find a printer in the Directory', 'Type the printer name, or click Next to browse for a printer', and 'Connect to a printer on the Internet or on your intranet'. The third option is selected. Below the selected option is a text field labeled 'Name:' and another labeled 'URL:' containing the text 'http://printerserver01/printers/4050PCL'. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

Connecting to a Printer via HTTP

When a printer is installed as described in the previous chapter, it can be accessed via HTTP instead of NetBIOS. The corresponding command on the client could look like this:

```
-p "\\http://printerserver01\HP LaserJet 4050 Series PCL"
```

(Note the two backslashes before the http)

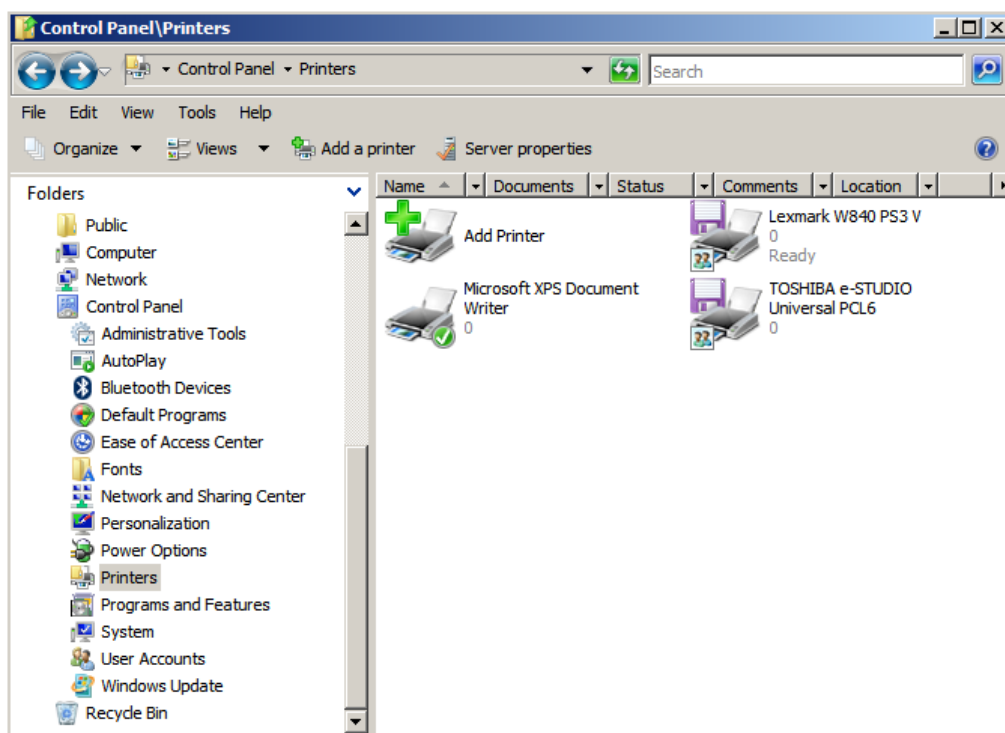
Keep in mind that using a printer via an Internet connection as described above may be unstable.

7 Troubleshooting

7.1 General

Printer Is Not Listed

Verify the printer is installed correctly and the user under which the 3-Height™ PDF Printer Service is running has access to it. Go to "Control Panel" -> "Printers" to see what printers are installed. When using a local printer, it must be listed in this window in order to be used.



Duplex Mode Is Not Listed or Does Not Work

If the duplex mode is not listed, check if the printer driver has an option that needs to be installed to allow duplex printing. Go to Start -> Settings -> Printer -> "right-click your printer" -> Properties -> Device Properties -> Look for Options like "Installable Options -> Duplex Unit".

If you can print duplex using other Applications (e.g. MS Word), try using the value "2" or "3" as parameter.

-d 2

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Page Does Not Fit on Paper

The option `-f` scales the page to fit the paper size. This option should be used when the dimensions of the PDF and the dimension of the paper size are different.

`-f`

Pages do Not Come Out with the Desired Orientation

Every page in a PDF document can have a separate rotation value. For example a page, which visually appears as a landscape can actually be a by 90 degrees rotated portrait. When sending such a page to the printer, it will be sent as portrait. When using the option `-r`, it will be sent the way it is viewed - as landscape.

Then the next option comes into play: `-o`. While `-r` was for the page, `-o` is for the paper. The default of option `-o` is `-1`, which means the printer driver defaults are used. `-2` means the automatic mode is used, this will set the orientation so that the page best fits the paper. Value `1` and `2` force the orientation to portrait and landscape.

If you would like to print a page, that appears as landscape, as landscape (and filling the paper), use a command like this:

`-f -o -2`

If you would like a landscape to be printed as portrait, and thereby only filling half of the paper, use a command like this:

`-f -o 1 -r`

Note that the option `-r` is redundant in combination with `-o -2`.

Text

- Ensure the two system environment variables `TEMP` and `TMP` exist and point to an existing directory. These variables not being set is a common error source for service applications that run under a user that has no temporary directory and thus cannot install fonts. See also chapter configuration.
- If you are using a local printer, ensure EMF is not used (`-e` not set).
- Ensure embedded fonts are used (`-oe` not set).
- See chapter "How to handle Non-Embedded Fonts" and in particular the sub-chapter "Other ways to deal with fonts that cannot be rendered correctly".
- If you are using an older printer driver, try `-o9` or install a newer printer driver.
- Try a different type of printer driver, e.g. PCL 6 instead of PS or vice versa.

Settings in the Printer or Device Mode Are Ignored

Certain settings applied to the device mode behave differently on local and network printers. It does not matter whether using device mode functions of the 3-Heights™ PDF Printer, or adjusting the defaults in the printer itself.

A very basic setting in the device mode, such as "print as landscape", should always work, whereas a more complex setting such as "print multiple pages on 1 paper" may

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fail on a local printer, but work on a network printer. This is due to the nature of how the printing system works on Windows. A detailed explanation is not provided here, but a work-around to this type of issue is normally using the EMF mode (which, as a side-effect, simulates a network environment even for local printers).

Black is Not Printed Completely Black

Sometimes black color is not printed completely black. This is caused due to color transformations between different color spaces.

Version 1.8.16.1 and later of the 3-Heights™ PDF Printer support a so called black point compensation. This allows for higher contrast of the black color. Black point compensation is applied automatically if no color profile is specified (i.e. no color profiles are available in the sub-directory Icc/). In this situation the conversion is done algorithmically using Neugebauer and black point compensation.

7.2 Spool Files Are Very Large

If the size of spool files should be reduced, the following points can be considered:

- Rendering Mode
- Printer Driver
- Network environment, RAW/EMF mode
- Resolution

Rendering Mode

The 3-Heights PDF Printer supports two rendering modes: Fast (default) and Accurate. The Fast mode uses the GDI, whereas the Accurate mode uses the GDI+. In the Accurate mode there are several filters available. These filters are intended for low resolution devices, such as a monitor or a raster image. On a 600dpi resolution printer, anti-aliasing has almost no visual impact. Therefore it is generally suggested to use the Fast mode. However there are certain documents that print quite differently using GDI or GDI+.

Printer Driver

Most printer devices understand more than one printer language. Most HP printers for example support different types of PCL (Printer Command Language), such as PCL 5, PCL 5e or PCL 6 and in addition PostScript. There are also printer devices which only support one printer language. It is usually best - and also suggested by printer manufacturers - to use the printer driver that works best. If PostScript yields large spool files or has rendering issues, try a PCL printer driver or vice versa.

The smallest spool sizes can be achieved by using either PostScript or PCL 6. This is heavily depending on the PDF input file.

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PostScript Injection

The reason why different applications can create spool files of very different sizes of the same PDF document is the way the spool file is created.

PostScript is generated using the *PScript5.dll*. To this DLL there are different plug-ins which are printer driver dependent, these plug-ins are *.psd* file. For example something like *hp4050.psd*.

A part of the created spool file uses a language called Document Structuring Conventions (DSC). These commands are printer driver dependent and could look like this:

```
%%Title: input.pdf
%%Creator: PScript5.dll Version 5.2.2
%%CreationDate: 5/23/2005 11:40:2
%%For: pre
%%BoundingBox: (atend)
%%DocumentNeededResources: (atend)
%%DocumentSuppliedResources: (atend)
%%DocumentData: Clean7Bit
%%TargetDevice: (HP LaserJet 4050 Series ) (2014.108) 1
%%LanguageLevel: 2
%%EndComments
```

The DSC is used to define the page settings and all printer driver dependent properties.

In between the DCS comments there are the actual PostScript commands (all the parts that don't start with `%%`) which provide all the information about the content of the page.

An application which is printing a spool file can first ask the GDI whether the type is PostScript. If the GDI says yes, then there is a so called "pass through mode" which can be used to provide the PostScript commands directly and let the printer driver only take care of the DSC. This called direct PostScript injection. Some printer drivers do not support this, in such cases it should be turned off.

Resolution

Most printer drivers support different resolutions (300 dpi, 600 dpi, 1200 dpi, etc.). Depending on the printer language and the document, the resolution influences the spool size. For printer devices that require raster graphics to be provided uncompressed and at device resolution, the size of an image at 1200 dpi is 16 the size as at 300 dpi.

7.3 Cannot Access Resource

The 3-Heights™ PDF Printer Service runs by default under the user LocalSystem. This user does not have access to any remote resources, such as printers on a remote host or if a watched folder is on a shared folder. In a network environment, it is best to run the service under a dedicated domain user which has the required permissions on remote resources.

A typical error message if a remote printer cannot be accessed has the form <time> * Error <error_number> while opening printer \\<server_name>\<printer_name>.

In the log of the service such an error message could look like this:

```
2007-03-01 12:10:07.590 * Error 5 while opening printer \\Server01\HP
LaserJet 4050 Series PS.
```

Please see chapter "Creating and Starting the PDF Print Service", which described how to set the user of the service.

A similar behavior can occur if a (local or remote) resource is on a mapped drive which is not known to the user of the service. E.g. if the command *subst* is used to map a directory to drive Z:, the drive Z: may be unknown to other users.

7.4 Printing In a Network Environment

It is preferable to not send large spool files over the network. To handle this there are two different approaches.

- Print the PDF at its destination: Usually a PDF is much smaller than a spool file. Therefore it makes sense to not print the PDF first and send a large spool file over the network, but instead send the PDF over the network and print it at its destination.
- Use EMF mode instead of RAW: By using the EMF (Windows Enhanced Metafile) mode, the document is sent as EMF over the network and converted to the printer language at its destination. This has the advantage of sending much less data over the network because the RAW spool file (e.g. PCL or PS) is created locally. The downside is possible issues with the printer driver at the remote site.

Use network shared printers with caution: Using shared printer resources in the Windows operating system always involve that printer drivers are transferred from the printer server to the client computer. It is recommended that the shared printer resource is mapped as a user with administrator rights in order to prevent from a failure of the printing application to open the printer connection.

Check permissions: The user of a printing application must at least have the "print" permission to use the referred printer object.

7.5 Unsupported PDF Features

The 3-Heights™ rendering engine supports transparency functions such as a number of blend modes as well as isolated and non-isolated transparency groups, but not transparency in general.

The filling of geometric figures with tiling and shading patterns may fail in some cases.

Appendix A: Default Values

A.1 Duplex Modes

- | | |
|-------------------|---------------------|
| 1 Simplex | 3 Horizontal Duplex |
| 2 Vertical Duplex | |

A.2 Bins

- | | |
|-------------------|----------------------|
| 1 Upper | 8 Tractor9 Small FMT |
| 2 Lower | 10 Large FMT |
| 3 Middle | 11 Large Capacity |
| 4 Manual | 12 undef. |
| 5 Envelope | 13 undef. |
| 6 Envelope Manual | 14 Cassette |
| 7 Auto | 15 Form Source |

A.3 Paper Sizes

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|-------------------------------|-------------------------------------|
| 1 Letter 8 1/2 x 11 in | 21 Envelope #11 4 1/2 x 10 3/8 |
| 2 Letter Small 8 1/2 x 11 in | 22 Envelope #12 4 1/2 x 11 |
| 3 Tabloid 11 x 17 in | 23 Envelope #14 5 x 11 1/2 |
| 4 Ledger 17 x 11 in | 24 C size sheet |
| 5 Legal 8 1/2 x 14 in | 25 D size sheet |
| 6 Statement 5 1/2 x 8 1/2 in | 26 E size sheet |
| 7 Executive 7 1/4 x 10 1/2 in | 27 Envelope DL 110 x 220mm |
| 8 A3 297 x 420 mm | 28 Envelope C5 162 x 229 mm |
| 9 A4 210 x 297 mm | 29 Envelope C3 324 x 458 mm |
| 10 A4 Small 210 x 297 mm | 30 Envelope C4 229 x 324 mm |
| 11 A5 148 x 210 mm | 31 Envelope C6 114 x 162 mm |
| 12 B4 (JIS) 250 x 354 | 32 Envelope C65 114 x 229 mm |
| 13 B5 (JIS) 182 x 257 mm | 33 Envelope B4 250 x 353 mm |
| 14 Folio 8 1/2 x 13 in | 34 Envelope B5 176 x 250 mm |
| 15 Quarto 215 x 275 mm | 35 Envelope B6 176 x 125 mm |
| 16 10x14 in | 36 Envelope 110 x 230 mm |
| 17 11x17 in | 37 Envelope Monarch 3.875 x 7.5 in |
| 18 Note 8 1/2 x 11 in | 38 6 3/4 Envelope 3 5/8 x 6 1/2 in |
| 19 Envelope #9 3 7/8 x 8 7/8 | 39 US Std Fanfold 14 7/8 x 11 in |
| 20 Envelope #10 4 1/8 x 9 1/2 | 40 German Std Fanfold 8 1/2 x 12 in |

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41 German Legal Fanfold 8 1/2 x 13 in	80 B5 (JIS) Rotated 257 x 182 mm
42 B4 (ISO) 250 x 353 mm	81 Japanese Postcard Rotated 148 x 100 mm
43 Japanese Postcard 100 x 148 mm	82 Double Japanese Postcard Rotated 148 x 200 mm
44 9 x 11 in	83 A6 Rotated 148 x 105 mm
45 10 x 11 in	84 Japanese Envelope Kaku #2 Rotated
46 15 x 11 in	85 Japanese Envelope Kaku #3 Rotated
47 Envelope Invite 220 x 220 mm	86 Japanese Envelope Chou #3 Rotated
48 RESERVED--DO NOT USE	87 Japanese Envelope Chou #4 Rotated
49 RESERVED--DO NOT USE	88 B6 (JIS) 128 x 182 mm
50 Letter Extra 9 \275 x 12 in	89 B6 (JIS) Rotated 182 x 128 mm
51 Legal Extra 9 \275 x 15 in	90 12 x 11 in
52 Tabloid Extra 11.69 x 18 in	91 Japanese Envelope You #4
53 A4 Extra 9.27 x 12.69 in	92 Japanese Envelope You #4 Rotated
54 Letter Transverse 8 \275 x 11 in	93 PRC 16K 146 x 215 mm
55 A4 Transverse 210 x 297 mm	94 PRC 32K 97 x 151 mm
56 Letter Extra Transverse 9\275 x 12 in	95 PRC 32K(Big) 97 x 151 mm
57 SuperA/SuperA/A4 227 x 356 mm	96 PRC Envelope #1 102 x 165 mm
58 SuperB/SuperB/A3 305 x 487 mm	97 PRC Envelope #2 102 x 176 mm
59 Letter Plus 8.5 x 12.69 in	98 PRC Envelope #3 125 x 176 mm
60 A4 Plus 210 x 330 mm	99 PRC Envelope #4 110 x 208 mm
61 A5 Transverse 148 x 210 mm	100 PRC Envelope #5 110 x 220 mm
62 B5 (JIS) Transverse 182 x 257 mm	101 PRC Envelope #6 120 x 230 mm
63 A3 Extra 322 x 445 mm	102 PRC Envelope #7 160 x 230 mm
64 A5 Extra 174 x 235 mm	103 PRC Envelope #8 120 x 309 mm
65 B5 (ISO) Extra 201 x 276 mm	104 PRC Envelope #9 229 x 324 mm
66 A2 420 x 594 mm	105 PRC Envelope #10 324 x 458 mm
67 A3 Transverse 297 x 420 mm	106 PRC 16K Rotated
68 A3 Extra Transverse 322 x 445 mm	107 PRC 32K Rotated
69 Japanese Double Postcard 200 x 148 mm	108 PRC 32K(Big) Rotated
70 A6 105 x 148 mm	109 PRC Envelope #1 Rotated 165 x 102 mm
71 Japanese Envelope Kaku #2	110 PRC Envelope #2 Rotated 176 x 102 mm
72 Japanese Envelope Kaku #3	111 PRC Envelope #3 Rotated 176 x 125 mm
73 Japanese Envelope Chou #3	112 PRC Envelope #4 Rotated 208 x 110 mm
74 Japanese Envelope Chou #4	113 PRC Envelope #5 Rotated 220 x 110 mm
75 Letter Rotated 11 x 8 1/2 11 in	114 PRC Envelope #6 Rotated 230 x 120 mm
76 A3 Rotated 420 x 297 mm	115 PRC Envelope #7 Rotated 230 x 160 mm
77 A4 Rotated 297 x 210 mm	116 PRC Envelope #8 Rotated 309 x 120 mm
78 A5 Rotated 210 x 148 mm	117 PRC Envelope #9 Rotated 324 x 229 mm
79 B4 (JIS) Rotated 364 x 257 mm	118 PRC Envelope #10 Rotated 458 x 324 mm